

COMPLETE LISTING OF ALL CLAIMS IN THE APPLICATION

1. (canceled)

2. (currently amended) A process for purification of ethylene oxide by distillation,
comprising the step in which

- an aqueous mixture comprising ethylene oxide, formaldehyde and at least 5% by weight of water is introduced via a feed into a distillation apparatus comprising at least one packed column which contains a structured or bulk packing and has a specific mass transfer area A , the mixture being introduced at a height above the bottom of at least x^{\min} , in m, which for a given specific mass transfer area A , in m^2/m^3 , is given by the equation

$$x^{\min} = 5.5 \text{ m} - A \cdot 0.006 \text{ m}^2,$$

- pure ethylene oxide containing 4 ppm or less formaldehyde, is taken off at the top and
- in the bottom phase a mixture is obtained which contains less than 5% by weight of ethylene oxide;

an acetaldehyde enriched fraction is removed as a sidestream from the column at a side take-off located between the top and bottom of the column,
and wherein the aqueous mixture is introduced via the feed at a height of from $1.5x^{\min}$ to $7x^{\min}$.

3. (canceled)

4. (previously presented) A process as claimed in claim 2, wherein the specific mass

transfer area A is in the range from $100 \text{ m}^2/\text{m}^3$ to $500 \text{ m}^2/\text{m}^3$.

5. (canceled)

6. (previously presented) A process as claimed in claim 2, which further comprises a step in which further mixture, comprising water, is additionally introduced via a feed line at a height of at least one theoretical stage or plate above the feed of the aqueous mixture.

7. (canceled)

8. (canceled)

9. (canceled)

10. (previously presented) A process as claimed in claim 4, which further comprises a step in which further mixture, comprising water, is additionally introduced via a feed line at a height of at least one theoretical stage of plate above the feed of the aqueous mixture.

11. (currently amended) A process for purification of ethylene oxide by distillation, comprising the step in which

- an aqueous mixture comprising ethylene oxide, formaldehyde and at least 5% by weight of water is introduced via a feed into a distillation apparatus comprising at least one packed column which contains a structured or bulk packing and has a specific mass transfer area A , the mixture being introduced at a height above the bottom of at least x^{min} , in m, which, for a given specific mass transfer area A , in m^2/m^3 , is given by the equation

$$x^{\min} = 5.5 \text{ m} - A \cdot 0.006 \text{ m}^2,$$

- pure ethylene oxide containing 4 ppm or less formaldehyde, is taken off at the top and
- in the bottom phase a mixture is obtained which contains less than 5% by weight of ethylene oxide;

an acetaldehyde enriched fraction is removed as a sidestream from the column at a side take-off located between the top and bottom of the column,

and wherein the specific mass transfer area A is in the range from $100 \text{ m}^2/\text{m}^3$ to $400 \text{ m}^2/\text{m}^3$.

12. (previously presented) A process as claimed in claim 11, which further comprises a step in which further mixture, comprising water, is additionally introduced via a feed line at a height of at least one theoretical stage or plate above the feed of the aqueous mixture.